EDF Energy Chemistry Health Indicator (CHI)

Presentation for the WANO CPI Working Group

Chemistry Health Indicator (CHI)

- In 2019, EDF Energy introduced a new Company Tier 2 metric for chemistry to replace one that was relevant only to gas-cooled reactors and that was not adequately reflecting plant risk and/or chemistry performance
- The new metric is called the Chemistry Health Indicator (CHI) and it is based on our Chemistry Compliance Monitoring Programme (CCMP), which has been used for ~20 years.
- Every month, CCMP scores each system at each station where chemistry is controlled and the score is based on the time that parameters are in specification. ≥95% time in specification (CCMP score ≥9.5) is green, 90-95% is amber and <90% is red.
- CHI the scores penalty points each month a system is not in green in CCMP. Points for system-in-amber and system-in-red are weighted to the significance of the system chemistry, with key systems such as primary and secondary scoring highest.

Example Monthly Reporting Table

System	Stations								Fleet
Primary	10.0	10.0	10.0	9.9	9.9	9.7	9.9	10.0	9.9
Secondary		10.0		9.9	10.0	9.3	9.5	10.0	9.8
Stator		9.8		9.8	10.0	10.0	9.6	10.0	9.9
PVCW	10.0	10.0	10.0	9.7	10.0	10.0	10.0		10.0
Pond	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
CW	1.9		7.6	9.8	9.1	9.9	9.8	7.5	7.9
CCWSt1	9.8	10.0	9.6	9.9	10.0	9.6	9.8	10.0	9.8
Off Load Boilers	10.0	9.8	9.4	9.5		9.5	10.0		9.7
Bor Aux								10.0	10.0
PS Leak								10.0	10.0
TLO	10.0	10.0		9.7	10.0	10.0	10.0	10.0	10.0
FRF		10.0		10.0	10.0	10.0	10.0	9.6	9.9
GCLO	10.0	10.0	10.0	9.9	10.0	10.0	10.0		10.0
FO Ess	10.0	10.0	10.0	10.0	9.5	10.0	10.0	10.0	9.9
Average	9.48	9.97	9.70	9.85	9.89	9.78	9.87	9.80	9.79
CHI	2	0	3	0	1	2	0	2	10

Reflections on CHI

- Since introduction in 2019, CHI has provided a simple effective metric for communicating chemistry-related performance and plant risks to station management teams
- CHI targets and performances have improved since that time, showing the metric has been effective in driving performance improvement
- The benefits of CHI are that it:
  - is simple and readily communicable
  - covers the full range of systems that require chemistry control
  - can readily highlight systems at risk (for example cooling water (CW) chlorination in the example table) and stations at risk
- The limitations of CHI are that it:
  - doesn't distinguish the levels of significance of non-compliances
  - doesn't reflect improvements within permitted ranges (ALARA principle)
  - doesn't target specific high significance chemistry parameters